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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/729,691	12/05/2003	John C. Calhoon	MSFT-2771/305126.01	4586

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EXAMINER	
PARSONS, THOMAS H	

ART UNIT	PAPER NUMBER
1745	

DATE MAILED: 07/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/729,691	CALHOON, JOHN C.	
	Examiner	Art Unit	
	Thomas H. Parsons	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 June 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-37* is/are pending in the application.

4a) Of the above claim(s) *12-37* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 December 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Claims 12-37 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 5 June 2006.

Specification

2. The disclosure is objected to because of the following informalities:

Paragraph [0043], suggest changing "sensor 1" to --sensor--;

Paragraph [0044], suggest changing "sensor 2" to --sensor--;

Paragraph [0045], suggest changing "sensor 3" to --sensor 340--;

Paragraph [0048], suggest changing "computer 110" to --computer 410--, and "processing unit 120" to --processing unit 420--; and,

Paragraph [0049], suggest changing "computer 110" to --computer 410--.

Appropriate correction is required.

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description:

"471", as shown in Figure 4;

"695" and "601", as shown in Figure 6; and,

"790" and "780", as shown in Figure 7.

Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3, 5, 7, and 9-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Lehmeier et al. (5,942,344).

Claim 1: Lehmeier et al. in the Figure disclose an apparatus for heating at least one fuel cell, comprising:

at least one fuel cell (4);

a resistive conductor (electric heating elements 12, 14) attached to a source of electricity (Lehmeier et al. disclose on col. 4: 16-19 that electric heating elements 12, 14 are heated as appropriated through electrical cables 50, 52. This disclosure has been construed as anticipating a source of electricity);

at least one current control component (regulating unit 54) that modifies the amount of electrical current flowing in the resistive conductor (i.e. the electrical heating elements are heated as appropriated through electrical cables); and

an insulating material (9) that surrounds the fuel cell and the resistive conductor.

See col. 2: 30-60, and col. 3: 33-col. 4: 20.

Claim 2: Lehmeier et al. in the Figure disclose at least one fuel cell stack (4). See col. 1: 40-43.

Claim 3: Lehmeier et al. in the Figure disclose that the resistive conductor contains metal. More particularly, Lehmeier et al. disclose, on col. 4: 16-19 that electric heating elements 12, 14 are heated as appropriated through electrical cables 50, 52. Accordingly, the disclosure has been construed as anticipating a resistive conductor containing metal as would be needed to conduct current through the electrical heating elements.

Claim 5: Lehmeier et al. in the Figure disclose that the at least one current control component includes at least one temperature transducer (62).

Claim 7: Lehmeier et al. in the Figure disclose that the one current control component includes a smart controller for automatically modifying the amount of electrical current in said resistive conductor. More particularly, Lehmeier et al. disclose on col. 4: 12-19, "*The operating temperature T.sub.0 is made available as a reference variable to the regulation unit 54 by a set*

value transmitter 56, through an electrical signal line 58. The controlled variable T is continuously compared with the reference variable T.sub.0 in the regulation unit 54. The electrical heating elements 12, 14 are heated as appropriate through electrical cables 50, 52, for the purpose of matching to the reference variable T_0." Thus, the regulation unit including a comparator function has been construed as a smart controller.

Claim 9: Lehmeier et al. disclose a switch capable of switching electrical current on and off. More particularly, Lehmeier et al. on col. 3: 1-10 disclose "...After relatively short breaks in operation, the high-temperature fuel cell block no longer needs to be raised to the required operating temperature T_0 again...", which anticipates the claimed switch.

Claim 10: Lehmeier et al. disclose at least one solid oxide fuel cell (4) (col. 1: 35-43).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 6, 8 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lehmeier et al. as applied to claim 1 above, and further in view of Blair et al. (5,170,124).

Lehmeier et al. are as applied, argued, and disclosed above, and incorporated herein.

Claim 6: Lehmeier et al. do not disclose at least one current control component including at least one ammeter for measuring the output of the at least one fuel cell.

Blair et al. disclose a current control component (i.e. regulation unit 54) including at least one ammeter for measuring the output of the at least one fuel cell. More particularly, Blair et al. disclose on col. 12: 26-46, "While the specific embodiments of the method and apparatus for monitoring fuel cell performance described above relate to a cell voltage comparator, it will be appreciated that the method and apparatus can be adapted to monitor other fuel cell performance indicators, such as the temperature, pressure and flow rates of the reactants and reaction products within the fuel cells. In these instances, the temperature of the fuel cells would be measured using thermocouples or other suitable temperature measurement means, the pressure would be measured using pressure transducers or other suitable pressure measuring means, and flow rates would be measured using flow meters or other suitable fluid flow measuring means. Rather than comparing the measured voltages to a reference voltage as in the fuel cell comparator, the temperature, pressure, flow rates or other performance indicator within representative fuel cells would be compared to a reference value such as a predetermined minimum value, the average value over all fuel cell groups, or the value in an adjacent fuel cell group to detect out of bounds conditions." The disclosure "other performance indicator within representative fuel cells would be compared to a reference value such as a predetermined minimum value" and other suitable measuring means have been construed as one ammeter for measuring the output of the at least one fuel cell. See also abstract, col. 7: 44-col. 8: 3, col. 8: 44-49, and, col. 9: 19-35 and 44-51.

Claim 8: Lehmeier et al. do not disclose a smart controller including a host interface for communications with a computer.

Blair et al. on col. 9: 19-31 disclose a smart controller including a host interface for communications with a computer.

Claim 11: Lehmeier et al. do not disclose a smart controller capable of monitoring and controlling fuel delivery into the at least one fuel cell.

As set forth above in claim 6, Blair et al. disclose a smart controller (i.e. a comparator comprising a computer and associated hardware/software) capable of monitoring and controlling fuel delivery into the at least one fuel cell.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the smart controller of Lehmeier et al. by incorporating smart controller of Blair et al. because Blair et al. teach a smart controller that would have provided a means for effectively controlling fuel cells in a fuel cell stack and their supporting equipment and to prevent operation in regimes which might cause damage to the fuel cell stack thereby the overall performance and efficiency of the fuel cell stack (col. 1: 8-15 and col. 8: 60-66).

8. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lehmeier et al. as applied to claim 1 above.

Claim 4: Lehmeier et al. disclose on col. 4: 16-19 that electric heating elements 12, 14 are heated as appropriate through electrical cables 50, 52, which anticipates a source of electricity but is silent as to the source being at least one of a battery, a fuel cell, and a power cord attached to a conventional wall plug.

However, it would have been a matter of choice to one with ordinary skill in the art at the time of the invention to select the appropriate electrical source depending upon the power

requirements of the heating elements, since the Applicant has not disclosed that this particular electrical source provides any criticality and/or unexpected results and it appears that the invention would perform equally well with any electrical source.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas H. Parsons whose telephone number is (571) 272-1290. The examiner can normally be reached on M-F (7:00-4:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Thomas H Parsons
Examiner
Art Unit 1745

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PATRICK JOSEPH RYAN
SUPERVISORY PATENT EXAMINER